EFFECTS OF EXPERIMENTAL FOOD ADDITION ON THE REPRODUCTIVE ECOLOGY OF THE NORTHERN GOSHAWK DURING BROOD-REARING

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In 1992 and 1993, 28 northern goshawk (*Accipiter gentilis*) broods in northcentral New Mexico were used in a supplemental feeding experiment to determine if there was a causal relationship between food availability and survival of young goshawks. The 28 nests were randomly assigned as treatments or controls, and treatment nestlings were given extra food from hatching (late April) until juvenile dispersal (mid-October). Morphometric measurements were taken and tarsal-mounted transmitters with mortality switches were attached to 42 nestling goshawks when they were 21 d old. Telemetry locations were made every 2 d until mid-October in 1992 and late November in 1993. Treatment birds had a significantly higher survival rate during the nestling period in 1993, but not in 1992. Because most control nestlings died from predation, we attribute the higher survival not to the slightly better physiological condition of supplemented nestlings, but to increased time spent in the nest stands by adult females whose presence probably deterred predators. There were no significant differences in nestling size or fledging dates. Treatment birds dispersed first but remained in the study area, whereas the control birds migrated out of the study area by October. We propose that both northern goshawk parental care and juvenile dispersal strategies vary with food availability.

MEXICAN SPOTTED OWL SYMPOSIUM

MEXICAN SPOTTED OWLS IN SOUTHEASTERN ARIZONA: CURRENT KNOWLEDGE

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Mexican spotted owls (*Strix occidentalis lucida*) exist in a naturally dispersed habitat matrix on isolated "sky-island" mountain ranges in sub-Mogollon Arizona. These mountain islands are mainly separated by desert-grassland associations or locally desert scrub, and are biogeographically linked to the Sierra Madre Occidental to the south and the Rocky Mountains to the north. In this mountain archipelago, spotted owls are mainly found in Madrean evergreen woodland and forest associations, and to a lesser degree relict conifer and Rocky Mountain montane conifer forest associations. These sites mainly contain multistoried, older-aged stands of trees. The majority of diurnal roost and nest sites coincide with a Mexican oak-pine woodland and mixed conifer or ponderosa pine forest mosaic at 2072–2286 m. These sites are often associated with canyon bottom habitat that includes riparian deciduous forest and woodland associations, and cliff sites are often present. Diet in southeastern Arizona consists of a wide variety of nocturnal and diurnal prey species, but woodrats (*Neotoma* spp.) and white-footed mice (*Peromyscus* spp.) are the most important prey items in terms of biomass and numbers taken. As part of an ongoing colormarking study we have banded over 150 adult, subadult, and juvenile spotted owls in southeastern Arizona. Of 56 hatching year juveniles banded from 1990–93, five have successfully dispersed and bonded with a mate. The sky-island mountain ranges of southeastern Arizona provides an ideal experimental setting to test questions of dispersal, genetic isolation, and demographics of small isolated populations of this species. We also discuss their distribution, density, reproduction, dispersal within and between isolated populations, and other aspects of their natural history in southeastern Arizona. In addition, a brief discussion of the possible effects of recent sweeping fires to spotted owls in the mountains of southeastern Arizona will be given.

SPOTTED OWLS AND ASSOCIATED RAPTORS IN ISOLATED CONIFEROUS FORESTS: IMPLICATIONS FOR THE RAPPROCHEMENT OF MAN AND NATURE

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For breeding birds of the coniferous forest, area of habitat is the major determinant of avifaunal size which peaks at 28 species in 30 km^2 on 12 isolated mountain ranges in southern Arizona, New Mexico, and trans-Pecos Texas. Species with northern biogeographic affinities are strongly constrained by habitat, whereas those with primary Sierra Madrean relations are also determined by isolation distance. Spotted owls (*Strix occidentalis*) have both Rocky Mountain and Sierra Madrean affinities and nest on forested mountain tops with at least 10 km^2 of habitat along with five other raptors (hawks are *Accipiter gentilis* and *A. striatus*). In the guild of four owls (*S. occidentalis, Aegolius acadicus, Glaucidium gnoma,* and *Otus flammeolus*), complementary feeding niches can contribute to habitat stability, so large patches of coniferous forest should be more stable. Implications for forest management in this and the avifaunal size-habitat area relationship are noted with special reference to the controversy about endangered species and habitat loss to a new astrophysical facility on Mt. Graham, Arizona.